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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/831,585	07/27/2001	Hans Biermaier	BHTH-5440	7039

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EXAMINER

CHORBAJI, MONZER R

ART UNIT	PAPER NUMBER
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1744

DATE MAILED: 08/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/831,585

Applicant(s)

BIERMAIER, HANS

Examiner

MONZER R. CHORBAJI

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11 and 13-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11 and 13-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This final action is in response to the communication received on 05/20/2005

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 11, 13-14, 20-23 and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Call et al (U.S.P.N. 6,623,603) in view of Gunn (U.S.P.N. 6,402,897) and further in view of Perry et al (U.S.P.N. 4,411,310).

With respect to claims 11 and 22, the Call reference discloses a device for the thermal purification of water (col.1, lines 19-22), which includes the following: a counterflow heat exchanger (in figure 6, the arrows refer to the direction of water flowing in opposite directions) with a conduit (for example, in figure 6, the conduit is equivalent to the preheater section and the condenser section that are in fluid communication with

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each other. See also, figure 11, 211, 205 and 209) having a heating section (figure 6, preheater) and a cooling section (figure 6, condenser) that are both in fluid connection (for example, see figure 6 and the direction of the arrows); a liquid heating source arranged in the center (col.13, lines 27-33 and figure 11, 200) of the concentric device (being the individual walls in figure 11 that form concentric channels); both sections being concentrically arranged around the heating source (in figure 11, 211 and 209 are positioned in a spiral arrangement around a central heat source located at 200); a metallic conduit (col.5, lines 65-66. The word conduit is considered equivalent to a channel); individual windings of conduit lying one on the other (in figure 6, the cooling section is lying on the heating section) and contacting each other (in figure 6, the heating and the cooling section contact each other) and a device (the meaning is considered equivalent to a piece of equipment designed to serve or perform a special function) for allowing liquid flow only in a direction from the heating section to the cooling section (the device being, for example, a pump for pressurizing water to cause it to flow in one direction into the heating or preheater section 100, col.9, lines 64-67).

With respect to claims 11 and 22, the Call reference fails to teach spiral arrangement of the device, using a check valve and using flexible material. The Gunn reference, which is in the art of water treatment, teaches that designing spiral heat exchangers (122) and using check valves (29) for allowing water to flow from the heating section (5) to the cooling section (13) are conventional. As a result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of the Call reference by including a check valve as taught by the Gunn reference in order

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to control the flow out of the heating section and to also prevent backflow of the heated water (col.6, lines 40-43).

However, with respect to claims 11 and 22, the Gunn reference fails to teach using flexible material. The Perry reference, which is in the art of designing heat exchangers, teaches building a heat exchanger apparatus with flexible sheets (col.4, lines 5-16). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the spiral heat exchanger of the Gunn reference by building it with flexible expanding sheets as taught by the Perry reference (col.17, lines 25-29) in order for the heat exchanger to be used for large scale operations (col.1, lines 14-16).

With respect to claims 13-14 and 23, the Call reference fails to teach the following: placing check valve at the inlet end of the heating section for allowing water to flow from the heating section to the cooling section; however, the Gunn reference teaches placing check valve (29) on the heating section for allowing water to flow from the heating section (5) to the cooling section (13). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of the Call reference by including a check valve as taught by the Gunn reference in order to control the flow out of the heating section and to also prevent backflow of the heated water (col.6, lines 40-43).

With respect to claims 20-21 and 29-30, both the Call reference and the Gunn reference fail teach a conduit made of metal film or plastic film; however, the Perry reference teaches using metal films (col.16, lines 57-59) and plastic films (col.17, lines

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26-27). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the spiral heat exchanger of the Gunn reference by building it thin plastic sheets as taught by the Perry reference (col.17, lines 25-29) in order for the heat exchanger to be used for large scale operations (col.1, lines 14-16).

4. Claims 15-16 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Call et al (U.S.P.N. 6,623,603) in view of Gunn (U.S.P.N. 6,402,897) and Perry et al (U.S.P.N. 4,411,310) as applied to claims 11 and 22 and further in view of Hakim-Elahi (U.S.P.N. 5,251,689).

With respect to claims 15-16 and 24-25, the Call reference, the Gunn reference and the Perry reference all fail to teach the concept of using elastic materials in building heat exchangers; however, the Hakim-Elahi reference teaches the use of elastic materials in the art of designing heat exchangers (col.1, lines 60-68). As a result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the heat exchanger of the Call reference by including elastic material as taught by the Hakim-Elahi reference in order to design a flexible heat exchanger (abstract, lines 5-6) that can be easily coiled.

5. Claims 17-19 and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Call et al (U.S.P.N. 6,623,603) in view of Gunn (U.S.P.N. 6,402,897) and Perry et al (U.S.P.N. 4,411,310) as applied to claims 11 and 22 and further in view of Suchomel et al (U.S.P.N. 5,687,678).

With respect to claims 17-19 and 26-28, the Call reference, the Gunn reference and the Perry reference all fail to teach the following: two individual conduits arranged coaxially one inside the other, individual windings lie in the same plane and individual windings arranged in a spherical form. The Suchomel reference, which is in the art of heating water by using spiral heat exchanger, teaches individual conduits arranged coaxially one inside the other (figure 3, 22, inner and outer tubings) and individual windings lie in the same plane (figure 3, two bottom tubings, 22, lie in the same plane). Further, the individual windings of the Suchomel reference are arranged in a cylindrical shape (figure 3, 22); however, choosing the shape of the heat exchanger coils is a matter of design choice that is within the scope of the artisan. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the concentric conduits of the heat exchanger of the Call reference by the spiral conduits since such a substitution is a matter of design choice as evidenced by the Suchomel reference.

Response to Arguments

6. Applicant's arguments filed on 05/20/2005 have been fully considered but they are not persuasive.

On page 4 of the Remarks section, applicant argues that, "Also, Figs. 6-7 of the provisional are not included in the Call patent." With respect to figure 6, the subject matter disclosed in figure 6 in the Call reference is illustrated in figure 4 in provisional application 60/105,045. Figure 4 of the provisional application shows a boiler, a

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preheater, a condenser, a subcooler and applied heat source at the center of the device.

On page 5 of the Remarks section, applicant argues that, "However, the purpose of these three heat exchangers is not to purify water. The gist of the Gunn device is the distillation unit 5, wherein the feed water is separated into distilled steam and concentrate." The Gunn reference is in the art of thermal treatment of liquids by boiling the water and condensing the generated steam into distilled water. The distilled water is used for residential needs in the form of heated or cooled water. Thus, like the instant claims, the Gunn reference generates water from steam; however, the Gunn reference calls it distilled water and the instant claims call it sterilized water. In addition, the instant claims are apparatus claims and sterilization of liquids is intended use and does not carry any patentable consideration.

On page 7 of the Remarks section, applicant argues that, "The check valves 29, 132, 232 of Gunn are only for controlling the flow of concentrate out of the distillation unit and to prevent backflow of concentrate." The examiner disagrees. The Gunn reference discloses a check valve that is capable not only to prevent backflow, but also to form a kind of pump in connection with gas bubbles produced by the heating section and to provide for stable pressure within the heating section, if it is in its closed position. The applicant in pages 6-7 of the Remarks section teaches various benefits of the check valve in the instant claims; however, such features are not disclosed in the claims. In addition, since the instant claims are apparatus claims, the intended use of the check valve does not carry any patentable consideration.

On page 7 of the Remarks section, applicant argues that, "In contrast, the flexible material of the heat exchanger of the claimed invention is used to allow peristaltic motion caused by the pressure waves mentioned above." The Perry reference, which is in the art of designing heat exchangers, teaches building a heat exchanger apparatus with flexible sheets (col.4, lines 5-16). The applicant in pages 7-8 of the Remarks section teaches various benefits of the using flexible material in the instant claims; however, such features are not disclosed in the claims. In addition, since the instant claims are apparatus claims, the flexible material of the Perry reference is capable of achieving such recited benefits.

On page 9 of the Remarks section, applicant argues that, "However, the rejection again fails to state a convincing line of reasoning why one of ordinary skill would have pieced together the disparate elements of four references." The examiner disagrees. The four references are in the art of thermal treatment of liquids by using heat exchangers and it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the heat exchanger of the Call reference by including elastic material as taught by the Hakim-Elahi reference in order to allow coiling of the heat exchanger (abstract, lines 5-6).

On page 10 of the Remarks section, applicant argues that, "Mere assertions that it is well within the ordinary skill in the art or an obvious matter of design choice are insufficient to make out a prima facie case of obviousness." The examiner disagrees since the specification does not provide any advantages or benefits to such limitations.

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See bottom of page 5 into top of page 6 and the middle of page 8, where such features are recited without providing any advantages.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
8. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **MONZER R. CHORBAJI** whose telephone number is (571) 272-1271. The examiner can normally be reached on M-F 6:30-3:00.
10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **JOHN KIM** can be reached on (571) 272-1142. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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07/27/2005

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